

CLAIMS

1. A microparticle production method of photo-pulverizing a substance in a solvent of a to-be-treated liquid to produce microparticles of the substance,

5 the microparticle production method comprising a step of, at the same time as illuminating a laser light of a predetermined wavelength onto the to-be-treated liquid to microparticulate the substance in the solvent, irradiating ultrasonic waves onto the to-be-treated liquid to prevent aggregation of the microparticles with each other.

10 2. The production method according to Claim 1, wherein the wavelength of the laser light used for microparticulation of the substance is longer than the wavelength of the absorption band due to electronic transition of the substance.

15 3. The production method according to Claim 1 or 2, wherein the irradiation of the ultrasonic waves onto the to-be-treated liquid is performed using a resonant vibration of a treatment chamber that contains the to-be-treated liquid.

20 4. The production method according to any one of Claims 1 to 3, wherein a vibration amplitude of a treatment chamber that contains the to-be-treated liquid is monitored and a frequency of the ultrasonic waves irradiated onto the to-be-treated liquid is set based on the monitoring result.

25 5. The production method according to any one of Claims 1 to 4, wherein the laser light illumination and the ultrasonic wave irradiation are performed while cooling the to-be-treated liquid.

6. The production method according to any one of Claims 1 to

5, wherein a dispersant is added to the to-be-treated liquid.

7. The production method according to any one of Claims 1 to 6, wherein the substance is an organic compound.

8. A microparticle production apparatus that photo-pulverizes a substance in a solvent of a to-be-treated liquid to produce microparticles of the substance, the microparticle production apparatus comprising:

a treatment chamber, containing the to-be-treated liquid;

a laser light source, illuminating a laser light of a predetermined wavelength, for microparticulating the substance in the solvent, onto the to-be-treated liquid contained in the treatment chamber;

an ultrasonic wave irradiating means, irradiating ultrasonic waves, for preventing aggregation of the microparticles with each other, onto the to-be-treated liquid; and

a controlling means, controlling the illumination of the laser light onto the to-be-treated liquid by the laser light source and the irradiation of the ultrasonic waves by the ultrasonic wave irradiating means.

9. The production apparatus according to Claim 8, wherein the wavelength of the laser light illuminated from the laser light source is longer than the wavelength of the absorption band due to electronic transition of the substance.

10. The production apparatus according to Claim 8 or 9, wherein the treatment chamber is a chamber enabling the irradiation of the ultrasonic waves onto the to-be-treated liquid to be performed using a resonant vibration.

11. The production apparatus according to any one of Claims 8 to 10, further comprising:

a vibration amplitude monitoring means, monitoring a vibration amplitude of the treatment chamber; and

5 wherein the controlling means sets a frequency of the ultrasonic waves irradiated onto the to-be-treated liquid based on a monitoring result by the vibration amplitude monitoring means.

12. The production apparatus according to any one of Claims 8 to 11, further comprising a cooling means for performing the laser light illumination and the ultrasonic wave irradiation while cooling the
10 to-be-treated liquid.

13. The production apparatus according to any one of Claims 8 to 12, wherein a dispersant is added to the to-be-treated liquid.

14. The production apparatus according to any one of Claims 8 to 13, wherein the substance is an organic compound.
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15. Microparticles produced by the microparticle production method according to any one of Claims 1 to 7.